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of which the longer arms will lie east and west, with an equatorial dome at the east, and a transit-room at the west extremity. The north and south arms will also terminate in domes for one of the photoheliographs and the photographic equatorial. For the spectroscopic work, probably, a heliostat will be used in connection with a fixed telescope, the axis of which is pointed to the pole. The astronomer's house is to be built a little below the observatory, so as to be sheltered from the strong winds on the hilltop, but will be close at hand, while houses for two or three assistants will be built somewhat farther off.

The staff as at present proposed will consist of the director, —who will also have charge of the Madras Observatory,—three assistants, a clerk, a mechanic, and the necessary servants. The headquarters of the director will be at Kodaikanal, and there will be an assistant superintendent and two assistants at Madras to carry on the time service and the meteorological observations. Two other assistants, whose main work will be computing, will probably be stationed at Madras so long as the publication of the arrears of old observations is going on.

MADRAS OBSERVATORY, 19th February, 1895.

LATEST NEWS FROM *MARS*.

[From the Boston *Commonwealth*.]

By EDWARD E. HALE.

"Mr. LOWELL'S four lectures on the planet *Mars* were heard by crowded audiences of people who filled every seat and all the standing-room in Huntington Hall. For once, we got the very latest advices from that planet. The observatory in Flagstaff, as our readers know, was established by Mr. LOWELL himself, and the position of *Mars* in the last summer gave him opportunity to make such observations as have never been made before, and to reveal to us what are marvels indeed. The result, as our readers know, is the firm conviction in his mind that intelligent beings occupy the planet *Mars*, who know how to work in the common good, who have contrived public works of vastly larger extent than we of the Earth have dreamed of, and have carried out their contrivances with a precision and strength wholly unknown in mundane affairs.

It is impossible in print to describe the charm of Mr. LOWELL'S lectures. His humor, his ready wit, his complete knowledge of the subject with which he deals are such as one has no right to expect in the same public speaker. The most serious considerations are made interesting by analogies with affairs with which we are familiar and in which we are at ease. Everybody knows how light his pen is when he writes of his travels; and his ease as a public speaker and the readiness with which he takes his audience into his confidence give an additional charm to the lectures as he reads, or rather as he delivers, them.

There are not more than twenty people in this Earth who have seen what he has seen. Even some of the great observatories of the world are so situated that they have not noted the marvels which the Flagstaff observatory has revealed to us. But truth is truth, and it matters but little whether at this moment it have twenty apostles or two thousand. It is certain that the revelations which the Flagstaff observatory has made from its signal station to the world are revelations which will be accepted.

It was Mr. LOWELL'S good fortune to reveal the relations of what he calls so well the "oases" with which the great canals of *Mars* communicate. These "junctions," shall we say, where two, three, four, or even seven, canals meet each other, seem to be the fortunate spots on the surface of *Mars* where one supposes that the inhabitants live in luxury, which they have secured for themselves by the diligent work, perhaps, of ages upon ages in the past. That is to say, an "oasis" (and of the oases one dares not say how many there are—they are to be counted now by hundreds) is a circular or oval spot, perhaps of 150 miles in diameter, of living green. Its green is so dense and dark that when we are 40,000,000 miles from it, its rich verdure may still be made out, if we have an air as clear as they have at Flagstaff. The readers of the *Commonwealth* must not regret that this green fades away in its season. They must remember that Boston Common to-day does not present, even to their own eyes, the same aspect with which they regarded it in July or in August. It cannot be doubted that in the period of vegetation these strong-minded and strong-limbed men have been able to lay up, perhaps the barrels of flour, perhaps the bales of manioc, perhaps the bananas or oranges, with which in the long winter of *Mars* they shall make life tolerable and even luxurious.

Mr. LOWELL, with great humor, but with absolutely accurate mathematics, showed to his hearers how large and tall and strong the Martian people might be. The attraction of gravitation is only one-third what we have here. The mathematical reader will see at once, if he be an anatomist as well, that there is no reason why the men should not be 19 feet tall, and why the Venus of Milo of *Mars* should not be 16 or 17 feet high. The physical power of this man is as great in proportion; his memory of the past may be more accurate, as it would seem that his foresight for the future is more sweeping. So it is that a population quite as dense, we may believe, as the population of this world, a population which has not spent, apparently, most of its history in mutual throat-cutting and constant quarreling, has achieved the marvels of irrigation and vegetation which we see upon the planet *Mars* to-day."—Reprinted from the *Scientific American*, March 2, 1895.*

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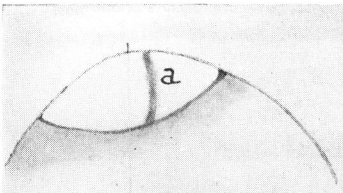
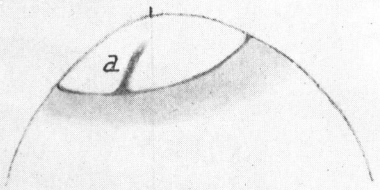
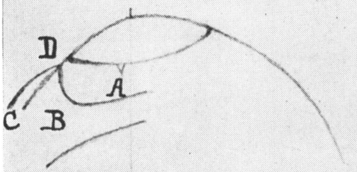
* The foregoing report, by the Reverend E. E. HALE, of a course of lectures lately delivered by Mr. PERCIVAL LOWELL, Director of the LOWELL Observatory in Arizona, may, apparently, be taken as a semi-official account of the conclusions reached by Mr. LOWELL from his observations of 1894. Before accepting as proved "the marvels of irrigation and vegetation which we see on the planet *Mars* to-day," etc., it would seem that observations ought to be continued for more than a single season, so as to make it certain that these are, in fact, marvels of vegetation which are seen. Something is seen, no doubt, but I may say that nothing has been observed at the LICK Observatory during the years 1888-1895, so far as I know, which goes to confirm the very positive and striking conclusions here described. It is a point to be noted that the conclusions reached by Mr. LOWELL at the end of his work, agree remarkably with the facts he set out to prove before his observatory was established at all. (See *Publications* A. S. P., Vol. VI (1894), page 162.) EDWARD S. HOLDEN.



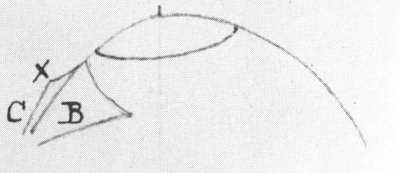
1894, June 12, $15^h\,30^m$.
$\lambda = 172^\circ.7;\ \phi = -23^\circ.7.$



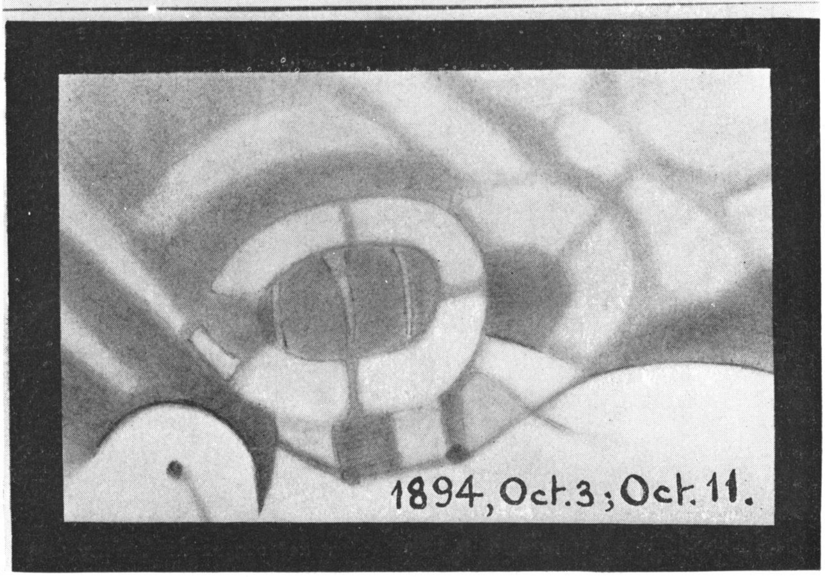
1894, June 12, $16^h\,0^m$.
$\lambda = 179^\circ.9;\ \phi = -23^\circ.7.$



1894, June 26, $15^h\,15^m$.
$\lambda = 31^\circ.7;\ \phi = -23^\circ.2.$



1894, June 26, $15^h\,25^m$.
$\lambda = 34^\circ.2;\ \phi = -23^\circ.2.$



1894, Oct. 3; Oct. 11.

MARS, 1894, BY EDWARD S. HOLDEN.